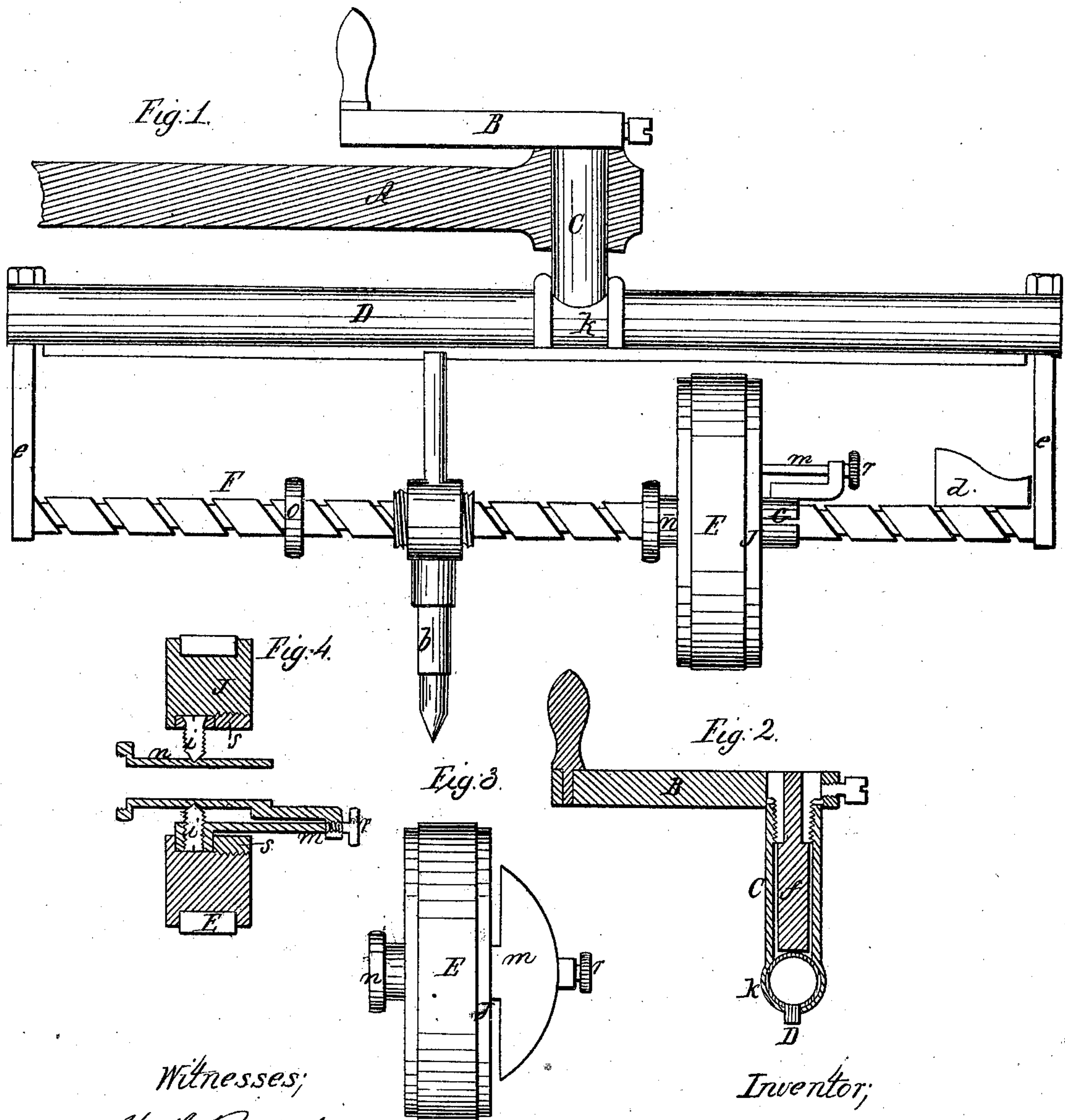


*L. W. Truesdell.*

*Describing Spiral Lines.*

*N<sup>o</sup> 97,571.*

*Patented Dec. 7, 1869.*



*Witnesses;*

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# United States Patent Office.

LEWIS W. TRUESDELL, OF OWEGO, NEW YORK.

Letters Patent No. 97,571, dated December 7, 1869; antedated November 30, 1869.

## IMPROVEMENT IN INSTRUMENT FOR DESCRIBING SPIRAL LINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LEWIS W. TRUESDELL, of Owego, in the county of Tioga, and State of New York, have invented a new and improved Instrument for the Use of Draughtsmen and Engineers, in Drawing Spirals and Volutes; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the accompanying drawings—

Figure 1 is a vertical longitudinal elevation;

Figure 2, a vertical section of the crank for operating the instrument, and the centre pivot on which the instrument turns.

Figure 3 is an elevation of the traverse-wheel E.

Figure 4, a vertical transverse section of wheel E.

To enable others skilled in the art, or that to which it is most nearly allied, to make and use my invention, I will describe its construction and operation.

In the accompanying drawings—

A is a fixed arm, attached to the drawing-board, by which the instrument is held in position while being operated.

B is a crank on the top of the centre pivot C, which passes through the arm A.

Attached to the bottom of the pivot C, is a clamp, *k*, partially surrounding the horizontal bar D.

This bar may be moved through the clamp *k*, from end to end, and fixed in any desired position by turning the crank, which, by means of a screw, forces down a stem, *f*, fig. 2, upon the bar D.

Attached to the ends of the bar D are two vertical rods *e e*, fig. 1, supporting, at their lower ends, the screw-shaft F.

On the screw are three separate parts, viz, the traverse-wheel E, a sleeve carrying the pencil-point *b*, and the collar *o*, which engages in the screw-thread.

The traverse-wheel is composed of a metal ring, J, with its periphery recessed to receive a rubber band, E', while within it, and fitted so as to turn freely, is a narrow ring, through opposite sides of which pass two screws *i i*, fig. 4.

These screws hold in their points a short sleeve or tube, *n*, through which passes the screw-shaft F, in the centre of the wheel.

The ring through which the screws *i i* pass is kept in place by a bushing, S, fig. 4, screwed up to it in the ring J, but allowing the inner ring to turn freely in the outer one.

The inner ring has a narrow plate firmly attached to it, which passes out to the side of the traverse-wheel, which is then formed in the shape of a section of a circle, *m*, the periphery of which is outward, and the screws *i i*, in the ring, are in the centre.

The tube *n*, in the centre of the wheel, and which

is held in place on the points of the screws *i i*, is provided with a small piece, which passes out under the plate *m*, and turns at a right angle across its circular edge, so that a set-screw, *r*, in the extension of the tube *n*, when turned up, will come in contact with the circular edge of the plate *m*.

The sleeve on the screw-shaft F, carrying the pencil *b*, has a screw on each end, by which it may be attached either to the tube *n* in the traverse-wheel, or to the ring *o* on the screw-shaft.

One end of the tube *n*, on the screw-shaft F, has a slot, *c*, and the traverse-wheel is also provided with a narrow groove on the same side, and when the traverse-wheel is moved to the end of the instrument, a thin plate, *d*, on the shaft F, enters the slot in the tube and traverse-wheel, which causes both to revolve together.

The socket holding the pencil has a spring inside, to press the pencil down upon the paper to be drawn upon.

In drawing spirals, the instrument is operated as follows:

The instrument is suspended in the arm A by the vertical pivot C; the traverse-wheel is moved to the end of the shaft F, and slipped upon the plate *d*; the bar D is placed in the clamp *k*, so that the wheel E shall be at the proper distance from the centre pivot C; the pencil placed under the centre pivot; the collar *o* turned up to the sleeve carrying the pencil, and screwed on. The instrument is then swept round by turning the crank B. The rubber band E, on the traverse-wheel, running on the drawing-board or paper, makes sufficient friction to revolve the wheel and shaft F, and the screw causes the pencil to recede from the centre as it revolves around the pivot C.

It will be seen that the distance from the traverse-wheel to the centre pivot will determine the number of revolutions of the screw-shaft, and consequently the pitch of the spiral to be drawn; and the bar D must be so placed in the clamp *k*, that the spiral shall be of the pitch desired.

In drawing concentric lines of varying pitch, the screw-thread on the shaft F is not used. The traverse-wheel is slipped off from the plate *d*, the pencil-sleeve is screwed fast to the end of the tube *n*, and the collar *o* is detached from the pencil, and turned back out of the way. The set-screw *r* is loosened, and the traverse-wheel is turned on the pointed screws *i i*, so that it will stand at any desired angle with the shaft F. The set-screw *r* is turned against the edge of the plate *m*, to retain it in that position. The outer ring, J, of the traverse-wheel now turns upon the inner one; this, with the tube *n*, which is attached to the pencil-carrier, being thereby prevented from turning.

Now if the instrument is swept round as before, the

traverse-wheel and pencil being free to slide on the shaft F, the variation of the traverse-wheel from a right angle with the shaft F, will cause the traverse-wheel to recede from the centre or approach it; this depending upon the direction the machine is turned, or the way the wheel is inclined on the shaft.

The pitch of the volute drawn is governed by the angle of the wheel upon the shaft F.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The peculiar construction of the traverse-wheel E, with its outer ring, J, with rubber band thereon, the inner ring with its plate *m*, and screws holding the

tube *n*, with its projecting arm and set-screw *r*, or any arrangement of parts substantially the same as herein set forth and described.

2. In combination with the traverse-wheel E, the screw-shaft F, pencil-carrier *b*, and ring *o*, when these several parts are applied in a compound "spiro-volutograph" for drawing concentric spiral lines, in the manner herein specified.

LEWIS W. TRUESDELL.

Witnesses:

H. A. BROOKS,

J. J. VAN KLEECK.